

**Table of Contents** *(scroll or use links below to navigate document)***What They Do****Tasks****Skills, Knowledge, and Abilities****Work Environment****California's Job Outlook and Wages****Trends****Training****Where Do I Find the Job?****Where Can the Job Lead?****Other Sources****View Career Video****What They Do**

Electricians do electrical work required in the building and remodeling of structures. Electricians need good mechanical ability; a thorough knowledge of the principles of electricity, circuitry, and power distribution within a building; and familiarity with the materials and techniques of construction. On small jobs they may work alone with minimal supervision, and they may supervise an apprentice. On large jobs they may work under the direction of the electrician supervisor or superintendent.

Maintenance Electricians typically work in large industrial buildings, commercial establishments, and production or processing plants. Maintenance Electricians perform most of their work in preventive maintenance and repairing electrical systems rather than installing new systems. When a breakdown occurs, they must diagnose and locate the cause, correct the problem, and restore service quickly. In hospitals, hotels, and public buildings, Electricians must operate and maintain emergency generators in the event of power failure.

**Tasks**

- ▶ Assemble, install, test, and maintain electrical or electronic wiring, equipment, appliances, apparatus, and fixtures, using hand tools and power tools.
- ▶ Diagnose malfunctioning systems, apparatus, components, using test equipment and hand tools, to locate the cause of a breakdown and correct the problem.
- ▶ Connect wires to circuit breakers, transformers, or other components.
- ▶ Inspect electrical systems, equipment, and components to identify hazards, defects, and the need for adjustment or repair, and to ensure compliance with codes.
- ▶ Advise management on whether continued operation of equipment could be hazardous.
- ▶ Test electrical systems and continuity of circuits in electrical wiring, equipment, and fixtures, using testing devices such as ohmmeters, voltmeters, and oscilloscopes, to ensure compatibility and safety of system.
- ▶ Maintain current electrician's license or identification card to meet governmental regulations.
- ▶ Plan layout and installation of electrical wiring, equipment and fixtures, based on job specifications and local codes.
- ▶ Direct and train workers to install, maintain, or repair electrical wiring, equipment, and fixtures.

## Electricians

- ▶ Prepare sketches or follow blueprints to determine the location of wiring and equipment and to ensure conformance to building and safety codes.

Detailed descriptions of this occupation may be found in the Occupational Information Network (O\*NET) at [online.onetcenter.org](http://online.onetcenter.org).

### Important Skills, Knowledge, and Abilities

- ▶ Building and Construction — Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures such as highways and roads.
- ▶ Mechanical — Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
- ▶ Mathematics — Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.
- ▶ Troubleshooting — Determining causes of operating errors and deciding what to do about it.
- ▶ Arm-Hand Steadiness — The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.
- ▶ Problem Sensitivity — The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.
- ▶ Finger Dexterity — The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.
- ▶ Near Vision — The ability to see details at close range (within a few feet of the observer).

### Work Environment

Electricians on construction sites work outdoors surrounded by noise. When working in old buildings, they may have to deal with dirt, cramped spaces, and poor ventilation. They may have to dig trenches to lay conduit. Maintenance Electricians usually work in finished buildings, which can be clean, air-conditioned offices or noisy, dirty factories. Electricians risk falls from ladders, scaffolds, and roofs. They risk injury from electrical shock, which can be fatal. To avoid injury, they must adhere to strict safety procedures.

The standard work week is generally 32 to 40 hours as determined by contract or company policy. Companies that operate 24-hours-a-day may require evening and graveyard shiftwork. Any overtime, weekend, and holiday work is also governed by contract or company policy. Most Electricians are members of the International Brotherhood of Electrical Workers.

### California's Job Outlook and Wages

The California Outlook and Wage table below represents the occupation across all industries.

Standard Occupational Classification	Estimated Number of Workers 2004	Estimated Number of Workers 2014	Average Annual Openings	2006 Wage Range (per hour)
<b>Electricians</b>				
47-2111	63,100	75,700	2,510	\$16.92 to \$30.68

*Wages do not reflect self-employment.*

*Average annual openings include new jobs plus net replacement.*

*Source: [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov), Employment Projections by Occupation and OES Employment & Wages by Occupation, Labor Market Information Division, Employment Development Department.*

## Trends

This occupation will have a robust growth rate of 20 percent during the 2004–2014 projection period. This growth will be fueled in large measure by the increased demand for new housing in California. The demand for Maintenance Electricians should be more stable overall during the same period of time.

## Training/Requirements/Apprenticeships

Electricians usually follow one of the following training paths:

- ▶ Formal apprenticeship
- ▶ Community college programs or certificates
- ▶ Vocational school
- ▶ Extensive on-the-job training

The apprenticeship program consists of 7,200 to 8,000 hours of combined on-the-job and classroom training. Candidates must be at least 18-years old and have a high school diploma. Upon completion of the program, they receive a “Certificate of Completion” from the California Division of Apprenticeship Standards.

Another method of entry into this occupation is completion of an electrical construction and maintenance program at a vocational or trade college. Graduates work as trainees, gaining journey-level status from six months to two years. Some cities and counties require Electricians to be licensed.

### Recommended High School Course Work

Completion of two semesters of algebra with a passing grade is highly desirable but one semester is usually required. Other recommended high school classes are physics, blueprint reading, and shop.

## Where Do I Find the Job?

Candidates for training or apprenticeship programs should apply to one of the several unions for Electricians. Direct application to employers is an effective job search method for journey-level Electricians. Community colleges throughout California also provide training for Electricians.

Use the *Search for Employers by Industry* feature on the *Career Center* page at [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov) to locate employers in your area. Search using keywords from the following construction industry names to get a list of private firms and their addresses:

- ▶ Elementary and Secondary Schools
- ▶ Employment Placement Agencies
- ▶ New Multifamily Housing
- ▶ New Single-Family Housing
- ▶ Oil and Gas Pipeline
- ▶ Power/Communication System
- ▶ Professional Employer Organizations
- ▶ Residential Remodelers
- ▶ Temporary Help Services
- ▶ Water and Sewer System

For local listings of contractors, search these **yellow page** headings for listings of private firms:

- ▶ Electric Contractors
- ▶ Electric Contractors-Comm. & Ind.
- ▶ Electric Equipment Service and Repair
- ▶ Electric Service and Utility Providers
- ▶ Electrical Consulting
- ▶ Electrical Power Systems-Testing
- ▶ Energy Consulting and Documentation
- ▶ Home Repair and Maintenance

## Electricians

### Where Can The Job Lead?

Journey-level Electricians can advance to the positions of leadperson supervisor, chief electrician, or superintendent. Others work as trade or vocational school instructors, building supply sales representatives, electrical inspectors, or estimators.

Electricians may go into business as electrical contractors. Businesses involved in electrical contracting need licensing from the Contractors State Licensing Board of the California State Department of Consumer Affairs.

### Other Sources of Information

International Brotherhood of Electrical Workers  
[www.ibew.org](http://www.ibew.org)

Western Electrical Contractors Association  
[www.weca-iec.org](http://www.weca-iec.org)

Associated Builders and Contractors  
[www.abc.org](http://www.abc.org)

California Department of Industrial Relations, Division of Apprenticeship Standards  
[www.dir.ca.gov/das](http://www.dir.ca.gov/das)

California Department of Consumer Affairs, Contractors State Licensing Board  
[www.cslb.ca.gov](http://www.cslb.ca.gov)